REMARKS

Status of the Claims

Claims 2, 4, and 8 have been canceled. Claim 11 has been amended to clarify the claimed invention. New claims 16-19 directly to the same invention as claims 1, 3, 5-7, and 9-15, have been added. Claims 1, 3, 5-7, 9-19 are currently pending.

Amendments to the Claims

The amendment to claim 11 and the addition of new claims 16-19 do not introduce prohibited new matter.

Support for the amendments to claims 11 can be found in claim 7.

Support for new claims 16-19 can be found in the claims 1 and 15.

Rejection Under 35 U.S.C. § 112, First Paragraph

Claims 1, 3, 5, 7, and 9-15 have been rejected under § 112, first paragraph, as enabling for sequences consisting of SEQ ID NOs: 7, 8, and 9, but does not reasonably provide enablement for any and all peptide constructs comprising the amino acid motif Ser-Cit-His, wherein said motif is an epitope recognized by autoantibodies.

Applicants respectfully traverse the rejection. The Office Action alleges that the claims read on any and all polypeptides which would include Ser-Cit-His for autoantibody binding. However, the claims do not read on any and all peptides comprising the Ser-Cit-His sequence. The claims only encompass peptides that meet the recited structural and functional limitations. Structurally, the claimed peptides must contain an epitope comprising the Ser-Cit-His motif, and functionally, the claimed peptides must contain an epitope recognized by anti-filaggrin autoantibodies present in the serum of rheumatoid arthritis patients. Therefore, not all peptides containing the Ser-Cit-His motif, as alleged by the Examiner, fall within the scope of the claims. The recited functional limitation excludes peptides not recognized by the autoantibodies from the claims. Thus, only those peptides bearing the Ser-Cit-His motif and recognized by the anti-filaggrin autoantibodies are encompassed by the invention.

The Office Action further asserts that there is no guidance in the specification as to how

to determine which sequences comprising the Ser-Cit-His motif, other than SEQ ID NOs: 7, 8, 9, would allow for autoantibody binding or recognition. Applicants respectfully submit that the specification provides sufficient guidance to enable the skilled artisan to obtain peptides encompassed by the claims. It is within the skill of the artisan to obtain the peptides having the structural motif Ser-Cit-His, since peptide synthesis is routinely performed by the skilled artisan. Additionally, the specification provides methods for obtaining citrullinated peptides and methods of screening for peptides that bind anti-filaggrin autoantibodies. Example 2 discloses methods for converting non-citrullinated peptides into citrullinated peptides and determining their reactivity to serum from patients suffering from rheumatorid arthritis (RA). Example 3 discloses methods of synthesizing citrullinated peptides and determining their reactivity to serum from patients suffering from RA and to anti-filaggrin autoantibodies purified from a pool of serum from 45 patients suffering from RA. Specifically, in Example 3, citrullinated peptides E-12-H and E-12-D (pages 12-13 of the specification) were obtained synthetically and were shown to bind anti-filaggrin antibodies in the serum of RA patients and purified from RA patients. Accordingly, the specification provides sufficient guidance to enable the skilled artisan to obtain peptides having the necessary motif, convert them to citrullinated form, and test them for reactivity with anti-filaggrin autoantibodies as described in the specification.

The Office Action alleges that not all peptides comprising the Ser-Cit-His motif will be recognized by anti-filaggrin autoantibodies. However, as discussed above, the specification provides sufficient guidance to enable the skilled artisan to determine which peptides are recognized by the anti-filaggrin autoantibodies.

Applicants assert that given the guidance provided by the specification, it would only require routine experimentation to obtain the peptides encompassed by the claims. It is well settled that routine experimentation should not be considered as undue in an enablement assessment. As stated in *Ex parte Jackson* and confirmed in *Ex parte Forman*, the court held:

> The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or in the specification in question provides a reasonable amount of guidance with respect to the direction in which experimentation should proceed to enable the determination of how to practice a desired embodiment of the invention. Because the present specification provides ample guidance and the experimentation is routine, the claims are in

compliance with the section 112 first paragraph requirement.

Ex parte Jackson 217 USPQ 804(Bd. Pat. App. 1982).

Moreover, at the time the application was filed, the art relating to binding interactions of antigen/antibody is well known, and the relative level of skill in this art is quite high. When the level of skill is high, extensive studies may be required. However, such extensive studies should not be construed as undue experimentation. In *Ex parte D*, the court held,

> Parallel to the holding in the Wands decision there was a high level of skill in this art at the time the application was filed and the method so needed to practice the invention were well known. . . [R]outine experimentation may involve rather extensive studies without straying from "undue experimentation.

Ex parte D, 27 USPQ2d 1067 (Bd. Pat App. & Int'f).

Additionally, Applicants respectfully submit that the claims do not encompass inoperative peptides, because only peptides that meet the recited structural and functional limitations are encompassed in the claims. Further, the skilled artisan would readily recognize inoperative embodiments in a claim and would not seek out embodiments that do not work. Regarding inoperative embodiments, the PTO Board of Appeal in *Ex parte Cole* stated:

> Claims are addressed to the person of average skill in the particular art compliance with 112 must be adjudged from that perspective, not in a vacuum. It is always possible to theorize some combination of circumstances which would render a claimed composition or method inoperative, but the art-skilled would assuredly not choose such a combination.

Ex parte Cole, 223 USPQ 94, 95-96 (PTO Bd. App. 1983).

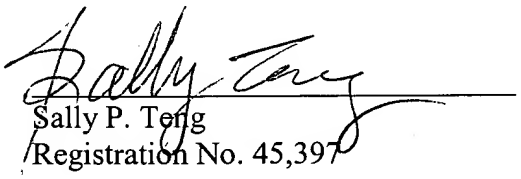
Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 112, first paragraph.

Conclusion

In view of the amendments and accompanying remarks, Applicants respectfully request reconsideration and timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,
Morgan, Lewis & Bockius LLP



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